

**Table B2-1: Initial and Calibrated Environmental Input Parameters for the Arnot and Gobas Food Web Model**

| Environmental Parameters, Sediment, Site-Specific      |                  |                            |  |                                 |                               |  |          |
|--|------------------|----------------------------|--|---------------------------------|-------------------------------|--|----------|
| Component  | Symbol           | Initial Value <sup>a</sup> | Comments   | Distribution                    | Calibrated Value <sup>b</sup> | Comments   | Units    |
| PCB Concentration <sup>c</sup>                         | C <sub>s</sub>   | 95.4/365.4                 | Spatially weighted average                       | None                            | Area Specific                 | Identified as a sensitive input parameter in the final FWM | µg/kg    |
| 4,4'-DDE Concentration in Sediment <sup>c</sup>        | C <sub>s</sub>   | 3.48/4.72                  | Spatially weighted average                       | None                            | Area Specific                 | Identified as a sensitive input parameter in the final FWM | µg/kg    |
| Sediment Organic Carbon <sup>c</sup>                   | C <sub>Sed</sub> | 0.018/0.02                 | Spatially weighted average                       | Normal<br>µ=0.0171<br>σ=0.00028 | 0.017                         |  | fraction |
| Environmental Parameters, Surface Water, Site-Specific |                  |                            |  |                                 |                               |  |          |
| Total PCB Concentration <sup>c</sup>                   | C <sub>WT</sub>  | 0.409                      | Round 2, Event 1, XAD data; Locations 5, 11 & 23 |                                 |                               | Identified as a sensitive input parameter in the final FWM | ng/L     |
| 4,4'-DDE Concentration <sup>c</sup>                    | C <sub>WT</sub>  | 0.023                      | Round 2, Event 1, XAD data                       |                                 |                               | Identified as a sensitive input parameter in the final FWM | ng/L     |
| Total Organic Carbon <sup>c</sup>                      | χ <sub>TOC</sub> | 2E-06/2.1E-06              | SP&S bridge/Midpoint Station 10801               |                                 | 0.017                         |  | kg/L     |
| Total Dissolved Carbon <sup>c</sup>                    | χ <sub>DOC</sub> | 1.6E-06/1.7E-06            | Derived from TOC                                 | Normal<br>µ=1.38E-6<br>σ=5.9E-8 | 1.3E-6                        |  | kg/L     |
| Total Particulate Carbon <sup>c</sup>                  | χ <sub>POC</sub> | 4E-07                      | Derived from TOC and Arnot and Gobas (2004)      |                                 |                               |  | kg/L     |

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|---|-----------------------|----------------------------|------------------------------------|--------------------------------------|-------------------------------|--|--|
| Mean Water Temperature <sup>c</sup>           | T                     | 13.4/13.7                  | SP&S bridge/Midpoint Station 10801 | Normal $\mu=13.9$ $\sigma= 1.7$      | 13.7                          | Identified as a sensitive input parameter in the final FWM | °C   |
| Dissolved Oxygen <sup>c</sup>                 | C <sub>ox</sub>       | 10.8/8.9                   | SP&S bridge/Midpoint Station 10801 |                                      |                               |  | mg/L   |
| Suspended Solids <sup>c</sup>                 | C <sub>ss</sub>       | 1.14E-05/0.078             | SP&S bridge/Midpoint Station 10801 | Normal $\mu=1.13E-5$ $\sigma=4.5E-6$ | 1.4E-5                        |  | kg/L   |
| <b>Biological Parameters, from Literature</b> |                       |                            |                                    |                                      |                               |  |  |
| Fraction of diet, prey item <i>i</i>          | P <sub><i>i</i></sub> | Species Specific           | Table 4                            |                                      | Table 4                       |  | unitless sum P <sub>1</sub> to P <sub><i>i</i></sub> = 1 |
| Organism Weight                               | W <sub>B</sub>        | Species Specific           | Table 4                            |                                      | Table 4                       |  | kg ww  |
| Lipid Fraction                                | V <sub>LB</sub>       | Species Specific           | Table 4                            |                                      | Table 4                       |  | kg lipid/kg organism                                     |
| Lipid Fraction (phytoplankton)                | V <sub>LP</sub>       | Species Specific           | Table 4                            |                                      | Table 4                       |  | kg lipid/kg phytoplankton                                |
| NLOM Fraction                                 | V <sub>NB</sub>       | Species Specific           | Table 4                            |                                      | Table 4                       |  | kg NLOM/kg organism                                      |
| NLOM Fraction (phytoplankton)                 | V <sub>NP</sub>       | Species Specific           | Table 4                            |                                      | Table 4                       |  | kg NLOM/kg phytoplankton                                 |
| Water Fraction                                | V <sub>WB</sub>       | Species Specific           | Table 4                            |                                      | Table 4                       |  | kg water/kg phytoplankton                                |
| Fraction Overlying Water Ventilated           | m <sub>O</sub>        | Species Specific           | Table 4                            |                                      | Table 4                       |  | unitless m <sub>O</sub> = 1 - m <sub>P</sub>             |
| Fraction Porewater Ventilated                 | m <sub>P</sub>        | Species Specific           | Table 4                            |                                      | Table 4                       |  | unitless   |

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|---|----------------|----------------------------|--|--------------|-------------------------------|----------|-------------------|
| Scavenging Efficiency                                   | $\sigma$       | 100                        | Used in feed rate calculations for filter feeders          | None Defined | 100                           |          | percent           |
| Resistance to Chemical Uptake (aquatic phase)           | A              | 6E-05                      | Great Lakes data; for algae, phytoplankton and macrophytes | None Defined | 6E-05                         |          | day <sup>-1</sup> |
| Resistance to Chemical Uptake (organic phase)           | B              | 5.5                        | Great Lakes data; for algae, phytoplankton and macrophytes | None Defined | 5.5                           |          | day <sup>-1</sup> |
| Sorption capacity of NLOM compared to octanol           | $\beta$        | 0.035                      |  | None Defined | 0.035                         |          | unitless          |
| Sorption capacity of NLOC compared to octanol           | $\gamma$       | 0.35                       |  | None Defined | 0.35                          |          | unitless          |
| Dietary lipid absorption efficiency                     | $\epsilon_L$   | 0.92/0.75/0.72             | Fish/invertebrates/zooplankton                             |              | Table 3                       |          | fraction          |
| Dietary NLOM absorption efficiency                      | $\epsilon_N$   | 0.55/0.75/0.72             | Fish/invertebrates/zooplankton                             |              | Table 3                       |          | fraction          |
| Dietary transfer efficiency constant A                  | EDA            |                            |  | None Defined | 3E-07                         |          |                   |
| Dietary transfer efficiency constant A                  | EDB            |                            |  | None Defined | 2                             |          |                   |
| <b>Environmental Parameters, from Literature, Other</b> |                |                            |  |              |                               |          |                   |
| Density of OC in Sediment                               | $\delta_{OCs}$ | 0.9                        |  |              |                               |          | fraction          |
| Disequilibrium factor for DOC Partitioning              | $D_{DOC}$      | 1                          |  |              |                               |          | unitless          |
| Disequilibrium factor for POC Partitioning              | $D_{POC}$      | 1                          |  |              |                               |          | unitless          |

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|--|---------------------|----------------------------|----------|--------------|-------------------------------|--|------------------------|
| Proportionality constant, phase partitioning of DOC compared to octanol. | $\alpha_{DOC}$      | 0.028                      |          |              | Table 4                       |  | unitless               |
| Proportionality constant, phase partitioning of POC compared to octanol. | $\alpha_{POC}$      | 0.35                       |          |              |                               |  | unitless               |
| <b>Chemical Parameters, from Literature<sup>d</sup></b>                  |                     |                            |          |              |                               |  |                        |
| Total PCB, octanol-water partition coefficient <sup>e</sup>              | log K <sub>ow</sub> | 6.3                        |          |              | Table 4                       | Identified as a sensitive input parameter in the final FWM | unitless               |
| Total PCB, Henry's law constant  | H                   | 43.3                       |          |              | Table 4                       |  | pa-m <sup>3</sup> /mol |
| 4,4'-DDE, octanol-water partition coefficient <sup>e</sup>               | log K <sub>ow</sub> | 6.76                       |          |              | Table 4                       | Identified as a sensitive input parameter in the final FWM | unitless               |
| 4,4'-DDE, Henry's law constant   | H                   | 2.13                       |          |              | Table 4                       |  | pa-m <sup>3</sup> /mol |

<sup>a</sup> Harbor-wide (RM 2 to 11.2) and Swan Island Lagoon input parameters were used in selection of a food web model. Where two values are presented in a cell the first is for RM 2-11, the second for Swan Island.

<sup>b</sup> Not all FWM input parameters were considered in for model calibration. Where cells are blank, initial input parameters were used in the final model

<sup>c</sup> Input based on site-specific data

<sup>d</sup> Chemical parameters for COC other than Total PCB and 4,4'-DDE are also provided in Table B-4.

<sup>e</sup> K<sub>ow</sub> was identified as a sensitive input parameter for bioaccumulative COCs